

Sequence Listing

<110> Joh-E IKEDA

Kenji YAMAMOTO

<120> APOPTOSIS INHIBITORY PROTEIN, GENE ENCODING THE PROTEIN
AND cDNA THEREOF

<130> 2000-1110/LC/00653

<140> NEW

<141> 2000-11-06

<150> 09/239,797

<151> 1999-01-29

<160> 8

<170> PatentIn Ver. 2.0

<210> 1

<211> 1403

<212> PRT

<213> Homo sapiens

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Gln Leu Ala Lys Glu Leu Glu Glu Glu Gln Lys Glu Arg Ala Lys
35 40 45
Met Gln Lys Gly Tyr Asn Ser Gln Met Arg Ser Glu Ala Lys Arg Leu
50 55 60
Lys Thr Phe Val Thr Tyr Glu Pro Tyr Ser Ser Trp Ile Pro Gln Glu
65 70 75 80
Met Ala Ala Ala Gly Phe Tyr Phe Thr Gly Val Lys Ser Gly Ile Gln
85 90 95
Cys Phe Cys Cys Ser Leu Ile Leu Phe Gly Ala Gly Leu Thr Arg Leu
100 105 110
Pro Ile Glu Asp His Lys Arg Phe His Pro Asp Cys Gly Phe Leu Leu
115 120 125
Asn Lys Asp Val Gly Asn Ile Ala Lys Tyr Asp Ile Arg Val Lys Asn
130 135 140
Leu Lys Ser Arg Leu Arg Gly Gly Lys Met Arg Tyr Gln Glu Glu
145 150 155 160
Ala Arg Leu Ala Ser Phe Arg Asn Trp Pro Phe Tyr Val Gln Gly Ile
165 170 175
Ser Pro Cys Val Leu Ser Glu Ala Gly Phe Val Phe Thr Gly Lys Gln
180 185 190
Asp Thr Val Gln Cys Phe Ser Cys Gly Gly Cys Leu Gly Asn Trp Glu
195 200 205
Glu Gly Asp Asp Pro Trp Lys Glu His Ala Lys Trp Phe Pro Lys Cys
210 215 220
Glu Phe Leu Arg Ser Lys Lys Ser Ser Glu Glu Ile Thr Gln Tyr Ile
225 230 235 240
Gln Ser Tyr Lys Gly Phe Val Asp Ile Thr Gly Glu His Phe Val Asn
245 250 255
Ser Trp Val Gln Arg Glu Leu Pro Met Ala Ser Ala Tyr Cys Asn Asp

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Ser Ile Phe Ala Tyr Glu Glu	Leu Arg Leu Asp Ser	Phe Lys Asp Trp
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Pro Arg Glu Ser Ala Val Gly Val	Ala Ala Leu Ala Lys Ala Gly Leu	
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Phe Tyr Thr Gly Ile Lys Asp Ile Val Gln Cys	Phe Ser Cys Gly Gly	
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Cys Leu Glu Lys Trp Gln Glu Gly Asp Asp	Pro Leu Asp Asp His Thr	
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Arg Cys Phe Pro Asn Cys Pro Phe	Leu Gln Asn Met Lys Ser Ser Ala	
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Glu Thr Thr Ser Glu Ser Asn Leu Glu Asp Ser	Ile Ala Val Gly Pro	
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Lys Asn Leu Asn Glu Gln Leu Arg Ala Ala	Tyr Thr Ser Ala Ser Phe	
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Glu Asp Leu Thr Met Cys Leu Met Ser Lys	Phe Thr Ala Gln Arg Leu	

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Thr Lys Ala Gly Pro Lys Ile Val Ser His Leu Leu His Leu Val Asp			
805	810	815	
Asn Lys Glu Ser Leu Glu Asn Ile Ser Glu Asn Asp Asp Tyr Leu Lys			
820	825	830	
His Gln Pro Glu Ile Ser Leu Gln Met Gln Leu Leu Arg Gly Leu Trp			
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Gln Ile Cys Pro Gln Ala Tyr Phe Ser Met Val Ser Glu His Leu Leu			
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Leu Arg Ser Ile His Phe Pro Ile Arg Gly Asn Lys Thr Ser Pro Arg			
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Thr Ile Asp Gln Asp Tyr Ala Ser Ala Phe Glu Pro Met Asn Glu Trp			
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Lys Cys Ser Ile Ser Lys Leu Glu Leu Ser Ala Ala Glu Gln Glu Leu			
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Leu Leu Thr Leu Pro Ser Leu Glu Ser Leu Glu Val Ser Gly Thr Ile			
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Gln Ser Gln Asp Gln Ile Phe Pro Asn Leu Asp Lys Phe Leu Cys Leu			
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Lys Glu Leu Ser Val Asp Leu Glu Gly Asn Ile Asn Val Phe Ser Val			
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Glu Ile Lys Phe Ser Asp Ser Phe Phe Gln Ala Val Pro Phe Val Ala			

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Ser Leu Ser Asn Leu Glu Glu Leu Ile Leu Pro Thr Gly Asp Gly Ile			
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Tyr Arg Val Ala Lys Leu Ile Ile Gln Gln Cys Gln Gln Leu His Cys			
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Leu Arg Val Leu Ser Phe Phe Lys Thr Leu Asn Asp Asp Ser Val Val			
1265	1270	1275	1280
Glu Ile Ala Lys Val Ala Ile Ser Gly Gly Phe Gln Lys Leu Glu Asn			
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Phe Phe Gln Ala Leu Asp Asn Met Pro Asn Leu Gln Glu Leu Asp Ile			
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<212> DNA

<213> Homo sapiens

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actgcttcct actaaaggac ggacagagca ttttttttcc agccacatac ttcccttcca 240

ctggccagca ttctcctcta ttagactaga actgtggata aacctcagaa a atg gcc 297
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10

15

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Leu Leu Pro Glu Leu Ser Ala Leu Leu Gly Leu Asp Ala Val Gln Leu

20

25

30

gca aag gaa cta gaa gag gag cag aag gag cga gca aaa atg cag 441
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aaa ggc tac aac tct caa atg cgc agt gaa gca aaa agg tta aag act	489
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Cys Cys Ser Leu Ile Leu Phe Gly Ala Gly Leu Thr Arg Leu Pro Ile	
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Glu Asp His Lys Arg Phe His Pro Asp Cys Gly Phe Leu Leu Asn Lys	
115 120 125 130	
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Asp Val Gly Asn Ile Ala Lys Tyr Asp Ile Arg Val Lys Asn Leu Lys	
135 140 145	
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Ser Arg Leu Arg Gly Gly Lys Met Arg Tyr Gln Glu Glu Ala Arg	
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Leu Ala Ser Phe Arg Asn Trp Pro Phe Tyr Val Gln Gly Ile Ser Pro	
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Cys Val Leu Ser Glu Ala Gly Phe Val Phe Thr Gly Lys Gln Asp Thr	
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Tyr Lys Gly Phe Val Asp Ile Thr Gly Glu His Phe Val Asn Ser Trp	
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340 345 350	
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 Cys Val Glu Gly Glu Ala Gly Ser Gly Lys Thr Val Leu Leu Lys Lys
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 Ile Ala Phe Leu Trp Ala Ser Gly Cys Cys Pro Leu Leu Asn Arg Phe
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 Gln Leu Val Phe Tyr Leu Ser Leu Ser Thr Arg Pro Asp Glu Gly
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 Thr Glu Met Cys Met Arg Asn Ile Ile Gln Gln Leu Lys Asn Gln Val
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 Pro Ser Phe Asp Asp Val Ala Val Phe Lys Ser Tyr Met Glu Arg Leu

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Arg Leu Ile Glu Leu Leu Asp Ser Asp Arg Gln Glu His Gln Asp Leu			
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Cys Pro Gln Ala Tyr Phe Ser Met Val Ser Glu His Leu Leu Val Leu			
855	860	865	
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Asn Leu Gln Tyr Phe Phe Asp His Pro Glu Ser Leu Ser Leu Leu Arg			
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Ser Ile His Phe Pro Ile Arg Gly Asn Lys Thr Ser Pro Arg Ala His			
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 Pro Asp Glu Glu Thr Ser Glu Lys Phe Ala Tyr Ile Leu Gly Ser Leu
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 Ser Asn Leu Glu Leu Ile Leu Pro Thr Gly Asp Gly Ile Tyr Arg
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 Val Ala Lys Leu Ile Ile Gln Gln Cys Gln Gln Leu His Cys Leu Arg
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 Val Leu Ser Phe Phe Lys Thr Leu Asn Asp Asp Ser Val Val Glu Ile
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 gcc aaa gta gca atc agt gga ggt ttc cag aaa ctt gag aac cta aag 4185

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 His Asn Leu Leu Pro Glu Leu Ser Ala Leu Leu Gly Leu Asp Ala Val

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Gln	Leu	Ala	Lys	Glu	Leu	Glu	Glu	Glu	Gln	Lys	Glu	Arg	Ala	Lys	
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Met	Gln	Lys	Gly	Tyr	Asn	Ser	Gln	Met	Arg	Ser	Glu	Ala	Lys	Arg	Leu
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Lys	Thr	Phe	Val	Thr	Tyr	Glu	Pro	Tyr	Ser	Ser	Trp	Ile	Pro	Gln	Glu
65				70					75						80
Met	Ala	Ala	Ala	Gly	Phe	Tyr	Phe	Thr	Gly	Val	Lys	Ser	Gly	Ile	Gln
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Cys	Phe	Cys	Cys	Ser	Leu	Ile	Leu	Phe	Gly	Ala	Gly	Leu	Thr	Arg	Leu
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Pro	Ile	Glu	Asp	His	Lys	Arg	Phe	His	Pro	Asp	Cys	Gly	Phe	Leu	Leu
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Asn	Lys	Asp	Val	Gly	Asn	Ile	Ala	Lys	Tyr	Asp	Ile	Arg	Val	Lys	Asn
				130					135						140
Leu	Lys	Ser	Arg	Leu	Arg	Gly	Gly	Lys	Met	Arg	Tyr	Gln	Glu	Glu	
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Ala	Arg	Leu	Ala	Ser	Phe	Arg	Asn	Trp	Pro	Phe	Tyr	Val	Gln	Gly	Ile
				165					170						175
Ser	Pro	Cys	Val	Leu	Ser	Glu	Ala	Gly	Phe	Val	Phe	Thr	Gly	Lys	Gln
				180					185						190
Asp	Thr	Val	Gln	Cys	Phe	Ser	Cys	Gly	Gly	Cys	Leu	Gly	Asn	Trp	Glu
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Glu	Gly	Asp	Asp	Pro	Trp	Lys	Glu	His	Ala	Lys	Trp	Phe	Pro	Lys	Cys
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Glu	Phe	Leu	Arg	Ser	Lys	Lys	Ser	Ser	Glu	Glu	Ile	Thr	Gln	Tyr	Ile
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Gln	Ser	Tyr	Lys	Gly	Phe	Val	Asp	Ile	Thr	Gly	Glu	His	Phe	Val	Asn
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Ser	Trp	Val	Gln	Arg	Glu	Leu	Pro	Met	Ala	Ser	Ala	Tyr	Cys	Asn	Asp
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Ser	Ile	Phe	Ala	Tyr	Glu	Glu	Leu	Arg	Leu	Asp	Ser	Phe	Lys	Asp	Trp
				275					280						285
Pro	Arg	Glu	Ser	Ala	Val	Gly	Val	Ala	Ala	Leu	Ala	Lys	Ala	Gly	Leu
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Phe	Tyr	Thr	Gly	Ile	Lys	Asp	Ile	Val	Gln	Cys	Phe	Ser	Cys	Gly	Gly
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Cys	Leu	Glu	Lys	Trp	Gln	Glu	Gly	Asp	Asp	Pro	Leu	Asp	Asp	His	Thr
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Arg	Cys	Phe	Pro	Asn	Cys	Pro	Phe	Leu	Gln	Asn	Met	Lys	Ser	Ser	Ala
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Glu	Val	Thr	Pro	Asp	Leu	Gln	Ser	Arg	Gly	Glu	Leu	Cys	Glu	Leu	Leu
				355					360						365
Glu	Thr	Thr	Ser	Glu	Ser	Asn	Leu	Glu	Asp	Ser	Ile	Ala	Val	Gly	Pro
				370					375						380
Ile	Val	Pro	Glu	Met	Ala	Gln	Gly	Glu	Ala	Gln	Trp	Phe	Gln	Glu	Ala
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Lys	Asn	Leu	Asn	Glu	Gln	Leu	Arg	Ala	Ala	Tyr	Thr	Ser	Ala	Ser	Phe
				405					410						415
Arg	His	Met	Ser	Leu	Leu	Asp	Ile	Ser	Ser	Asp	Leu	Ala	Thr	Asp	His
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Leu	Leu	Gly	Cys	Asp	Leu	Ser	Ile	Ala	Ser	Lys	His	Ile	Ser	Lys	Pro
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Val	Gln	Glu	Pro	Leu	Val	Leu	Pro	Glu	Val	Phe	Gly	Asn	Leu	Asn	Ser
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Val	Met	Cys	Val	Glu	Gly	Glu	Ala	Gly	Ser	Gly	Lys	Thr	Val	Leu	Leu
				465					470						480
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Gln Val Leu Phe Leu Leu Asp Asp Tyr	Lys Glu Ile Cys Ser Ile Pro	
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Gln Val Ile Gly Lys Leu Ile Gln Lys Asn	His Leu Ser Arg Thr Cys	
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Cys Ile Leu Arg Lys Leu Phe Ser His	Asn Met Thr Arg Leu Arg Lys	
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Phe Met Val Tyr Phe Gly Lys Asn Gln Ser	Leu Gln Lys Ile Gln Lys	
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Phe Asp Pro Ser Phe Asp Asp Val Ala	Val Phe Lys Ser Tyr Met Glu	
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Arg Leu Ser Leu Arg Asn Lys Ala	Thr Ala Glu Ile Leu Lys Ala Thr	
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Val Ser Ser Cys Gly Glu Leu Ala	Leu Lys Gly Phe Phe Ser Cys Cys	
690	695	700
Phe Glu Phe Asn Asp Asp Asp Leu Ala	Glu Ala Gly Val Asp Glu Asp	
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720		
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Arg Pro Phe Tyr Arg Phe Leu Ser Pro	Ala Phe Gln Glu Phe Leu Ala	
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Gly Met Arg Leu Ile Glu Leu Leu Asp	Ser Asp Arg Gln Glu His Gln	
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Asp Leu Gly Leu Tyr His Leu Lys Gln	Ile Asn Ser Pro Met Met Thr	
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Val Ser Ala Tyr Asn Asn Phe Leu Asn	Tyr Val Ser Ser Leu Pro Ser	
785	790	795
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Thr Lys Ala Gly Pro Lys Ile Val Ser	His Leu His Leu Val Asp	
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Gln Ile Cys Pro Gln Ala Tyr Phe Ser	Met Val Ser Glu His Leu Leu	
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895		
Ser Pro Phe Val Leu Gln Phe Leu Gln	Gly Arg Thr Leu Thr Leu Gly	
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Ala Leu Asn Leu Gln Tyr Phe Asp His	Pro Glu Ser Leu Ser Leu	
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Leu Arg Ser Ile His Phe Pro Ile	Arg Gly Asn Lys Thr Ser Pro Arg	
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Ala His Phe Ser Val Leu Glu Thr Cys	Phe Asp Lys Ser Gln Val Pro	
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Thr Ile Asp Gln Asp Tyr Ala Ser Ala	Phe Glu Pro Met Asn Glu Trp	

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Ser Pro Lys Gln Tyr Lys Ile	Pro Cys Leu Glu Val	Asp Val Asn Asp	
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Ser Ala Ser Gln Arg Ile	Glu Leu His Leu Asn	His Ser Arg Gly Phe	
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Ile Glu Ser Ile Arg Pro	Ala Leu Glu Leu Ser	Lys Ala Ser Val Thr	
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Lys Cys Ser Ile Ser Lys	Leu Glu Leu Ser Ala	Ala Glu Gln Glu Leu	
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Gln Ser Gln Asp Gln Ile	Phe Pro Asn Leu Asp	Lys Phe Leu Cys Leu	
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Lys Glu Leu Ser Val Asp	Leu Glu Gly Asn Ile	Asn Val Phe Ser Val	
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Ile Pro Glu Glu Phe Pro	Asn Phe His His Met	Glu Lys Leu Leu Ile	
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Asn Ser Pro Asn Leu His	Val Phe His Leu Lys	Cys Asn Phe Phe Ser	
1155	1160	1165	
Asp Phe Gly Ser Leu Met	Thr Met Leu Val Ser	Cys Lys Lys Leu Thr	
1170	1175	1180	
Glu Ile Lys Phe Ser Asp	Ser Phe Phe Gln Ala	Val Pro Phe Val Ala	
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Ser Leu Pro Asn Phe Ile	Ser Leu Lys Ile Leu	Asn Leu Glu Gly Gln	
1205	1210	1215	
Gln Phe Pro Asp Glu Glu	Thr Ser Glu Lys Phe	Ala Tyr Ile Leu Gly	
1220	1225	1230	
Ser Leu Ser Asn Leu Glu	Glu Leu Ile Leu Pro	Thr Gly Asp Gly Ile	
1235	1240	1245	
Tyr Arg Val Ala Lys Leu	Ile Ile Gln Gln Cys	Gln Leu His Cys	
1250	1255	1260	
Leu Arg Val Leu Ser Phe	Phe Lys Thr Leu Asn	Asp Asp Ser Val Val	
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 Leu Leu Pro Glu Leu Ser Ala Leu Leu Gly Leu Asp Ala Val Gln Leu
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 Ala Lys Glu Leu Glu Glu Glu Gln Lys Glu Arg Ala Lys Met Gln
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 Lys Gly Tyr Asn Ser Gln Met Arg Ser Glu Ala Lys Arg Leu Lys Thr
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 Phe Val Thr Tyr Glu Pro Tyr Ser Ser Trp Ile Pro Gln Glu Met Ala
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 Ala Ala Gly Phe Tyr Phe Thr Gly Val Lys Ser Gly Ile Gln Cys Phe
 85 90 95
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 Cys Cys Ser Leu Ile Leu Phe Gly Ala Gly Leu Thr Arg Leu Pro Ile
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 115 120 125 130
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Phe Ala Tyr Glu Glu	Leu Arg Leu Asp Ser	Phe Lys Asp Trp Pro	Arg
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295	300	305	
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Thr Gly Ile Lys Asp Ile	Val Gln Cys Phe Ser	Cys Gly Gly Cys Leu	
310	315	320	
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Glu Lys Trp Gln Glu Gly	Asp Asp Pro Leu Asp	Asp His Thr Arg Cys	
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Phe Pro Asn Cys Pro Phe	Leu Gln Asn Met Lys	Ser Ser Ala Glu Val	
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Thr Pro Asp Leu Gln Ser	Arg Gly Glu Leu Cys	Glu Leu Leu Glu Thr	
355	360	365	370
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Thr Ser Glu Ser Asn Leu	Glu Asp Ser Ile Ala	Val Gly Pro Ile Val	
375	380	385	
cca gaa atg gca cag ggt	gaa gcc cag tgg ttt	caa gag gca aag aat	1497
Pro Glu Met Ala Gln Gly	Glu Ala Gln Trp Phe	Gln Glu Ala Lys Asn	
390	395	400	
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Leu Asn Glu Gln Leu Arg	Ala Ala Tyr Thr Ser	Ala Ser Phe Arg His	
405	410	415	
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Met Ser Leu Leu Asp Ile	Ser Ser Asp Leu Ala	Thr Asp His Leu Leu	
420	425	430	
ggc tgt gat ctg tct att	gct tca aaa cac atc	agc aaa cct gtg caa	1641
Gly Cys Asp Leu Ser Ile	Ala Ser Lys His Ile	Ser Lys Pro Val Gln	
435	440	445	450
gaa cct ctg gtg ctg cct	gag gtc ttt ggc aac	ttg aac tct gtc atg	1689
Glu Pro Leu Val Leu Pro	Glu Val Phe Gly Asn	Leu Asn Ser Val Met	
455	460	465	
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Cys Val Glu Gly Glu Ala	Gly Ser Gly Lys Thr	Val Leu Leu Lys Lys	
470	475	480	
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Ile Ala Phe Leu Trp Ala	Ser Gly Cys Cys Pro	Leu Leu Asn Arg Phe	
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Gln Leu Val Phe Tyr Leu	Ser Ser Thr Arg Pro	Asp Glu Gly	
500	505	510	
ctg gcc agt atc atc	tgt gac cag ctc cta	gag aaa gaa gga tct gtt	1881
Leu Ala Ser Ile Ile	Cys Asp Gln Leu Leu	Glu Lys Glu Gly Ser Val	
515	520	525	530
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Thr Glu Met Cys Met	Arg Asn Ile Ile	Gln Gln Leu Lys Asn Gln Val	
535	540	545	
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Leu Phe Leu Leu Asp Asp	Tyr Lys Glu Ile	Cys Ser Ile Pro Gln Val	
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ata gga aaa ctg att caa	aaa aac cac tta tcc	cg acc tgc cta ttg	2025
Ile Gly Lys Leu Ile Gln	Lys Asn His Leu Ser	Arg Thr Cys Leu Leu	
565	570	575	

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 580 585 590
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 595 600 605 610
 tta cgg aag ctc ttt tca cat aat atg act cgt ctg cga aag ttt atg 2169
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 Val Tyr Phe Gly Lys Asn Gln Ser Leu Gln Lys Ile Gln Lys Thr Pro
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 Pro Ser Phe Asp Asp Val Ala Val Phe Lys Ser Tyr Met Glu Arg Leu
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 tcc tta agg aac aaa gcg aca gct gaa att ctc aaa gca act gtg tcc 2361
 Ser Leu Arg Asn Lys Ala Thr Ala Glu Ile Leu Lys Ala Thr Val Ser
 675 680 685 690
 tcc tgt ggt gag ctg gcc ttg aaa ggg ttt ttt tca tgt tgc ttt gag 2409
 Ser Cys Gly Glu Leu Ala Leu Lys Gly Phe Phe Ser Cys Cys Phe Glu
 695 700 705
 ttt aat gat gat gat ctc gca gaa gca ggg gtt gat gaa gat gaa gat 2457
 Phe Asn Asp Asp Asp Leu Ala Glu Ala Gly Val Asp Glu Asp Glu Asp
 710 715 720
 cta acc atg tgc ttg atg agc aaa ttt aca gcc cag aga cta aga cca 2505
 Leu Thr Met Cys Leu Met Ser Lys Phe Thr Ala Gln Arg Leu Arg Pro
 725 730 735
 ttc tac cgg ttt tta agt cct gcc ttc caa gaa ttt ctt gcg ggg atg 2553
 Phe Tyr Arg Phe Leu Ser Pro Ala Phe Gln Glu Phe Leu Ala Gly Met
 740 745 750
 agg ctg att gaa ctc ctg gat tca gat agg cag gaa cat caa gat ttg 2601
 Arg Leu Ile Glu Leu Leu Asp Ser Asp Arg Gln Glu His Gln Asp Leu
 755 760 765 770
 gga ctg tat cat ttg aaa caa atc aac tca ccc atg atg act gta agc 2649
 Gly Leu Tyr His Leu Lys Gln Ile Asn Ser Pro Met Met Thr Val Ser
 775 780 785
 gcc tac aac aat ttt ttg aac tat gtc tcc agc ctc cct tca aca aaa 2697
 Ala Tyr Asn Asn Phe Leu Asn Tyr Val Ser Ser Leu Pro Ser Thr Lys
 790 795 800
 gca ggg ccc aaa att gtg tct cat ttg ctc cat tta gtg gat aac aaa 2745
 Ala Gly Pro Lys Ile Val Ser His Leu Leu His Leu Val Asp Asn Lys
 805 810 815
 gag tca ttg gag aat ata tct gaa aat gat gac tac tta aag cac cag 2793
 Glu Ser Leu Glu Asn Ile Ser Glu Asn Asp Asp Tyr Leu Lys His Gln
 820 825 830
 cca gaa att tca ctg cag atg cag tta ctt agg gga ttg tgg caa att 2841
 Pro Glu Ile Ser Leu Gln Met Gln Leu Leu Arg Gly Leu Trp Gln Ile
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 tgt cca caa gct tac ttt tca atg gtt tca gaa cat tta ctg gtt ctt 2889
 Cys Pro Gln Ala Tyr Phe Ser Met Val Ser Glu His Leu Leu Val Leu
 855 860 865
 gcc ctg aaa act gct tat caa agc aac act gtt gct gcg tgt tct cca 2937
 Ala Leu Lys Thr Ala Tyr Gln Ser Asn Thr Val Ala Ala Cys Ser Pro
 870 875 880
 ttt gtt ttg caa ttc ctt caa ggg aga aca ctg act ttg ggt gcg ctt 2985

Phe	Val	Leu	Gln	Phe	Leu	Gln	Gly	Arg	Thr	Leu	Thr	Leu	Gly	Ala	Leu	
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Asn	Leu	Gln	Tyr	Phe	Phe	Asp	His	Pro	Glu	Ser	Leu	Ser	Leu	Leu	Arg	
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Ser	Ile	His	Phe	Pro	Ile	Arg	Gly	Asn	Lys	Thr	Ser	Pro	Arg	Ala	His	
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Phe	Ser	Val	Leu	Glu	Thr	Cys	Phe	Asp	Lys	Ser	Gln	Val	Pro	Thr	Ile	
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Asp	Gln	Asp	Tyr	Ala	Ser	Ala	Phe	Glu	Pro	Met	Asn	Glu	Trp	Glu	Arg	
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Asn	Leu	Ala	Glu	Lys	Glu	Asp	Asn	Val	Lys	Ser	Tyr	Met	Asp	Met	Gln	
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cgc	agg	gca	tca	cca	gac	ctt	agt	act	gcc	tat	tgg	aaa	ctt	tct	cca	3273
Arg	Arg	Ala	Ser	Pro	Asp	Ile	Ser	Thr	Gly	Tyr	Trp	Lys	Leu	Ser	Pro	
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aag	cag	tac	aag	att	ccc	tgt	cta	gaa	gtc	gat	gtg	aat	gat	att	gat	3321
Lys	Gln	Tyr	Lys	Ile	Pro	Cys	Leu	Glu	Val	Asp	Val	Asn	Asp	Ile	Asp	
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Val	Val	Gly	Gln	Asp	Met	Leu	Glu	Ile	Leu	Met	Thr	Val	Phe	Ser	Ala	
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Ser	Gln	Arg	Ile	Glu	Leu	His	Leu	Asn	His	Ser	Arg	Gly	Phe	Ile	Glu	
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Ser	Ile	Arg	Pro	Ala	Leu	Glu	Leu	Ser	Lys	Ala	Ser	Val	Thr	Lys	Cys	
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Ser	Ile	Ser	Lys	Leu	Glu	Leu	Ser	Ala	Ala	Glu	Gln	Glu	Leu	Leu	Leu	
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acc	ctg	cct	tcc	ctg	gaa	tct	ctt	gaa	gtc	tca	ggg	aca	atc	cag	tca	3561
Thr	Leu	Pro	Ser	Leu	Glu	Ser	Leu	Glu	Val	Ser	Gly	Thr	Ile	Gln	Ser	
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Gln	Asp	Gln	Ile	Phe	Pro	Asn	Leu	Asp	Lys	Phe	Leu	Cys	Leu	Lys	Glu	
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Glu	Glu	Phe	Pro	Asn	Phe	His	His	Met	Glu	Lys	Leu	Leu	Ile	Gln	Ile	
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Ser	Ala	Glu	Tyr	Asp	Pro	Ser	Lys	Leu	Val	Lys	Leu	Ile	Gln	Asn	Ser	
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Pro	Asn	Leu	His	Val	Phe	His	Leu	Lys	Cys	Asn	Phe	Phe	Ser	Asp	Phe	
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Lys	Phe	Ser	Asp	Ser	Phe	Phe	Gln	Ala	Val	Pro	Phe	Val	Ala	Ser	Leu	

1190	1195	1200	
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Pro Asn Phe Ile Ser Leu Lys Ile Leu Asn Leu Glu Gly Gln Gln Phe			
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Pro Asp Glu Glu Thr Ser Glu Lys Phe Ala Tyr Ile Leu Gly Ser Leu			
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Ser Asn Leu Glu Glu Leu Ile Leu Pro Thr Gly Asp Gly Ile Tyr Arg			
1235	1240	1245	1250
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Val Ala Lys Leu Ile Ile Gln Gln Cys Gln Gln Leu His Cys Leu Arg			
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Val Leu Ser Phe Phe Lys Thr Leu Asn Asp Asp Ser Val Val Glu Ile			
1270	1275	1280	
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Gly Glu Leu Val Phe Gln Leu Ala Trp Lys Pro Val Val			
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31

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